

DP-300505

DESIGN AND METHOD OF MANUFACTURING A PLASMA REACTOR FOR TREATING AUTO EMISSIONS - STACKED SHAPES

ABSTRACT OF THE DISCLOSURE

A non-thermal plasma reactor element is provided comprising a multi-cell stack prepared from a plurality of formed building blocks of dielectric material, the walls of the building blocks defining a cell having an exhaust passage for flowing gas to be treated therethrough. A conductive print forming an electrode and connector is disposed on at least one wall of each of the cells and outer insulative plates, disposed on opposite ends of the multi-cell stack, are provided to protect the conductive print. Also provided is a simplified, low cost method for preparing the non-thermal plasma reactor.

The method comprises forming cell building blocks of material having a high dielectric constant, printing a conductive print onto the walls of the cells, assembling the cells into a multi-cell stack, providing electrical connections for connecting said cells to a high voltage source, applying insulation to said multi-cell stack, and inserting the multi-cell stack into a non-thermal plasma reactor housing. The simplified design eliminates the need for spacers between individual cells, thus reducing the total number of components. The method employing formed shape building blocks provides flexibility and may be used in conjunction with conventional processing methods. The printing sequence is defined from the top of the multi-cell stack to the bottom, further minimizing the number of components. Use of a three-dimensional conductive print further simplifies preparation by eliminating the need for a secondary conductive print along the edge of the multi-cell stack after assembly.